

## CLAIMS:

1. A method for diagnosing a segment of a process control network comprising:
  - receiving a DLPDU on the process control network;
  - taking a measurement of the DLPDU network to extract measurement data;
  - testing a status indicator to determine if the DLPDU is currently active; and
  - associating the measurement data with the DLPDU if the status indicator is true.
2. The method of claim 1 and further comprising:
  - setting the status indicator to true while the DLPDU is being received.
3. The method of claim 1 wherein the status indicator is a boolean attribute.
4. The method of claim 1 wherein the step of receiving comprises:
  - selecting a free block of registers;
  - writing DLPDU data to the free block of registers; and
  - setting the status indicator to true.
5. The method of claim 4 and further comprising:
  - setting the status indicator to false upon receipt of an end of activity field in the DLPDU from the process control network.

6. The method of claim 1 wherein the process control network is a Fieldbus network.
7. A method for associating measurement data with a DLPDU on a process control network comprising:
  - measuring a received DLPDU object on a network segment to derive measurement data; and
  - associating the received DLPDU object with the measurement data if a currently active attribute is true after the measurement data is taken.
8. The method of claim 7 further comprising:
  - setting a currently active attribute to true after receiving a start of activity delimiter of the DLPDU object; and
  - setting the currently active attribute to false after receiving an end of activity delimiter of the DLPDU object.
9. The method of claim 7 wherein the measuring is performed while the DLPDU object is active on the process control network.
10. The method of claim 7 wherein DLPDU data representing the received DLPDU object is read from a queue according to an order in which the DLPDU data was received.
11. A method of associating measurement data with a received process signal on a process control loop, the method comprising:
  - receiving a process signal from the process control loop with a diagnostic tool connected to the process control loop;

measuring the received process signal to derive measurement data;  
writing data representing the process signal to a memory queue  
along with a currently active attribute;  
processing with the diagnostic tool the data at a front of the memory  
queue such that the data stored first in the memory queue is  
processed first; and  
associating the measurement data with the data from the memory  
queue received if the currently active attribute associated  
with the data from the queue is true at the time of  
processing.

12. The method of claim 11 wherein the diagnostic tool is powered by the process control loop.
13. The method of claim 11 wherein the step of processing is performed in software.
14. The method of claim 11 wherein the step of processing is performed by a circuit.